ASTROFILES

Auburn Astronomical Society Newsletter

April 2020 *Newsletter Editor — John Wingard — jwin1048@gmail.com*

Moon Phases

April 30 — First Quarter

May 7 — Full Moon

May 14 — Last Quarter

May 22 — New Moon

May 29 — First Quarter

June 5 — Full Moon

June 13 — Last Quarter

June 21 — New Moon

Stay in touch with us

http://www.auburnastro.org

https://www.facebook.com/groups/79864233515/

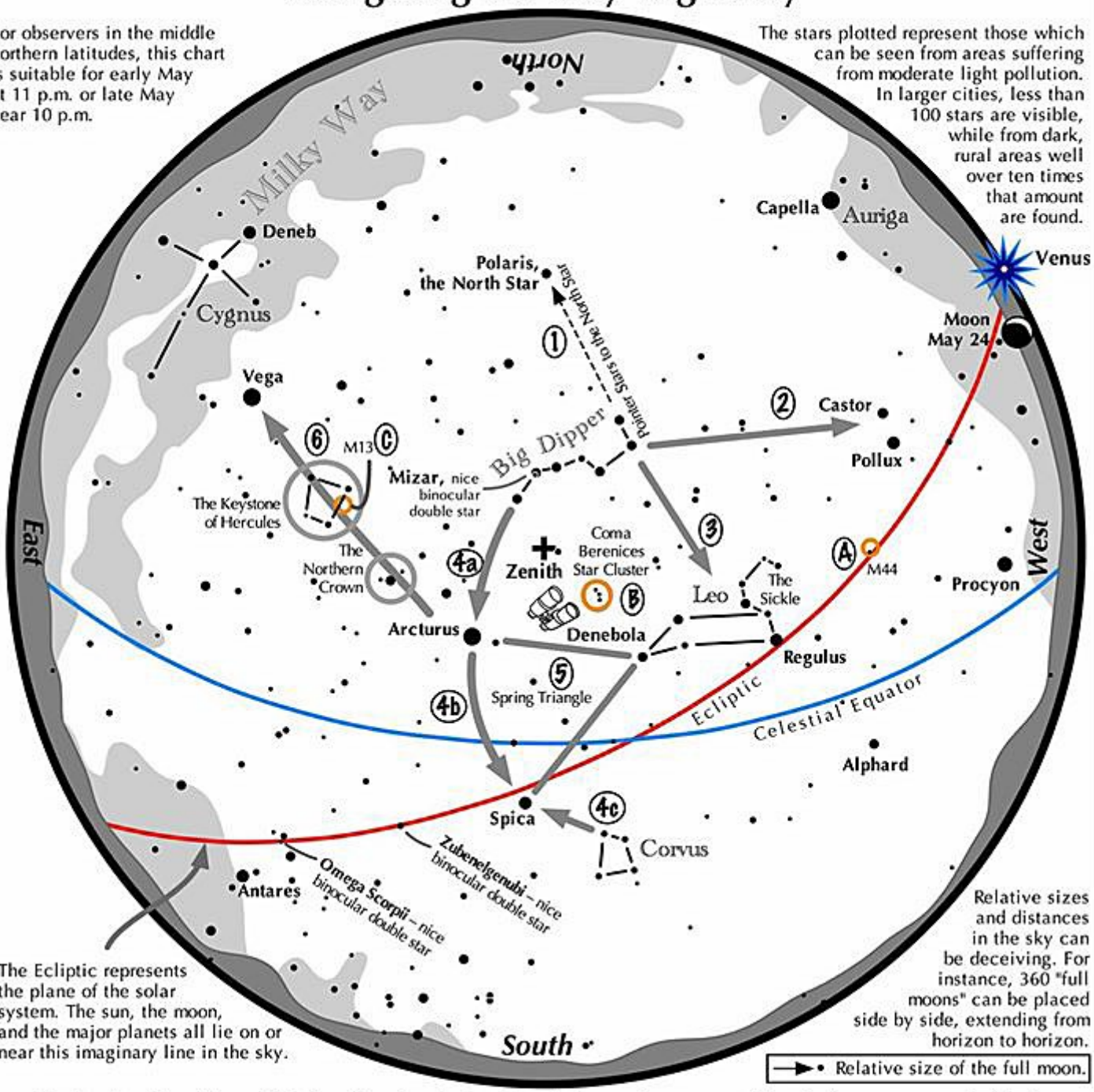
Latest News and Events

As we progress through the spring months we still find ourselves basically restricted from many normal activities due to the COVID-19 pandemic. Although some restrictions are slowly being lifted, these conditions are likely to be with us in varying degrees for quite a while longer, possibly even throughout the remainder of this year. Our AAS club meetings are on hold as are our usual star gazes for the public. The annual Astronomy Day activities that were scheduled in May at the W. A. Gayle Planetarium have also been cancelled. There is another National Astronomy Day scheduled for Saturday, September 26, 2020, so it is possible that something might be worked out for that date, but we can only speculate at this point. The AAS will also celebrate its 40th anniversary in September so if we get to do Astronomy Day that month we might be able to combine it with our club celebration. We'll just have to wait and see.

Update on the Heaven Hill observing site

AAS member Mike Lewis reports that for the foreseeable future all access to the Russell Lands properties (which includes the Heaven Hill site) are restricted. We have also learned that even when the restrictions are lifted, we will only be permitted access to the site as part of a scheduled group. In other words, individuals should not go on their own at random times. Mike is acting as our liaison with the Russell Lands management and will coordinate the scheduling of all of the star gazes that we wish to conduct at the site. Once the restrictions are lifted, we may be able to have monthly events at the site around the times of the new moon, or for other special events. We will post further updates as soon as we know more.

Navigating the May Night Sky



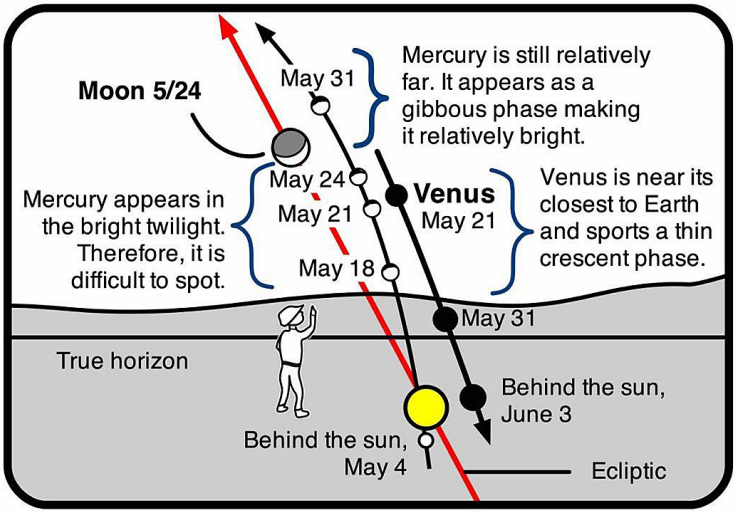
Navigating the May night sky: Simply start with what you know or with what you can easily find.

1. Extend a line northward from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
2. Through the two diagonal stars of the Dipper's bowl, draw a line pointing to the twin stars of Castor and Pollux in Gemini.
3. Directly below the Dipper's bowl reclines the constellation Leo with its primary star, Regulus.
4. Follow the arc of the Dipper's handle. It first intersects Arcturus, then continues to Spica. Confirm Spica by noting that two moderately bright stars just to its southwest form a straight line with it.
5. Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
6. Draw a line from Arcturus to Vega. One-third of the way sits "The Northern Crown." Two-thirds of the way hides the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.

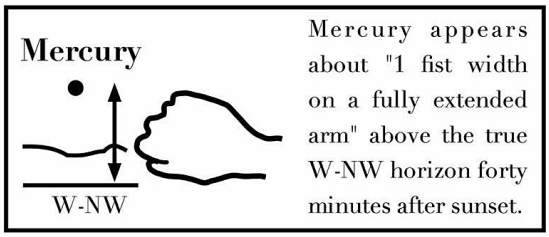
Binocular Highlights

A: M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux. **B:** Look near the zenith for the loose star cluster of Coma Berenices. **C:** M13, a round glow from a cluster of over 500,000 stars.

If you can observe only one celestial event this month, see this one:

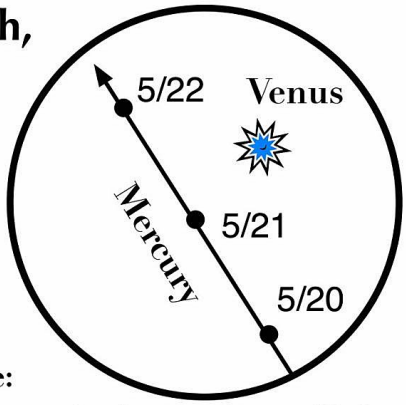


May 2020:
Mercury & Venus forty minutes after sunset in the west-northwest



Mercury appears about "1 fist width on a fully extended arm" above the true W-NW horizon forty minutes after sunset.

View through 10x50 binoculars on March 18



The Scene:
Mercury and Venus in the evening twilight

Have you ever spotted Mercury? Many stargazers have not. The third week of May presents a good opportunity to catch the elusive little planet as it moves in the same part of the sky as bright Venus. Look low into the west-northwestern twilight forty minutes after sunset.

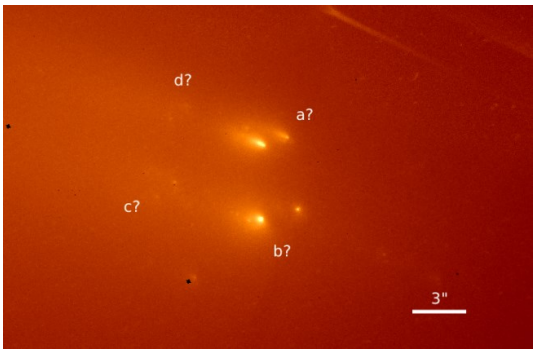
Mercury rises above the w-nw horizon after May 18, then climbs higher each evening, becoming easier to spot. Simultaneously, easily-seen Venus drops closer to the horizon all month, eventually passing the sun on June 3.

- As Venus drops closer to the horizon, it becomes difficult to see after May 24.
- Using binoculars, look on May 20-22 for little Mercury passing the much brighter Venus. Can you see it with the unaided eye?
- With steadily held binoculars, can you see the tiny, thin crescent of Venus? You may need to wear sunglasses to cut through the glare of the planet.

Comet ATLAS...that's the way the comet crumbles!

Skywatchers had high hopes that a comet called ATLAS would light up the night sky this spring, with forecasts suggesting it could become bright enough to see with the unaided eye.

Instead, the icy object crumbled to pieces — but it's still putting on a spectacular show for scientists. Ye Quanzhi, an astronomer at the University of Maryland, snagged some time with NASA's Hubble Space Telescope to take a look at Comet ATLAS on Monday (April 20) and caught a stunning image of its fragments that he shared on Twitter as a preview of his research.



An image taken on April 20, 2020, shows the fragments of Comet ATLAS.

"We have been following the break-up of ATLAS since it was first detected in early April, but with ground-based telescopes we couldn't resolve most of the debris field," Ye told Space.com in an email, adding that he was excited to see the new images. "With Hubble, we are finally able to resolve individual mini-comets."

Article Credit—Meghan Bartells—SPACE.COM

This article is distributed by
NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

Become a Citizen Scientist with NASA!

David Prosper

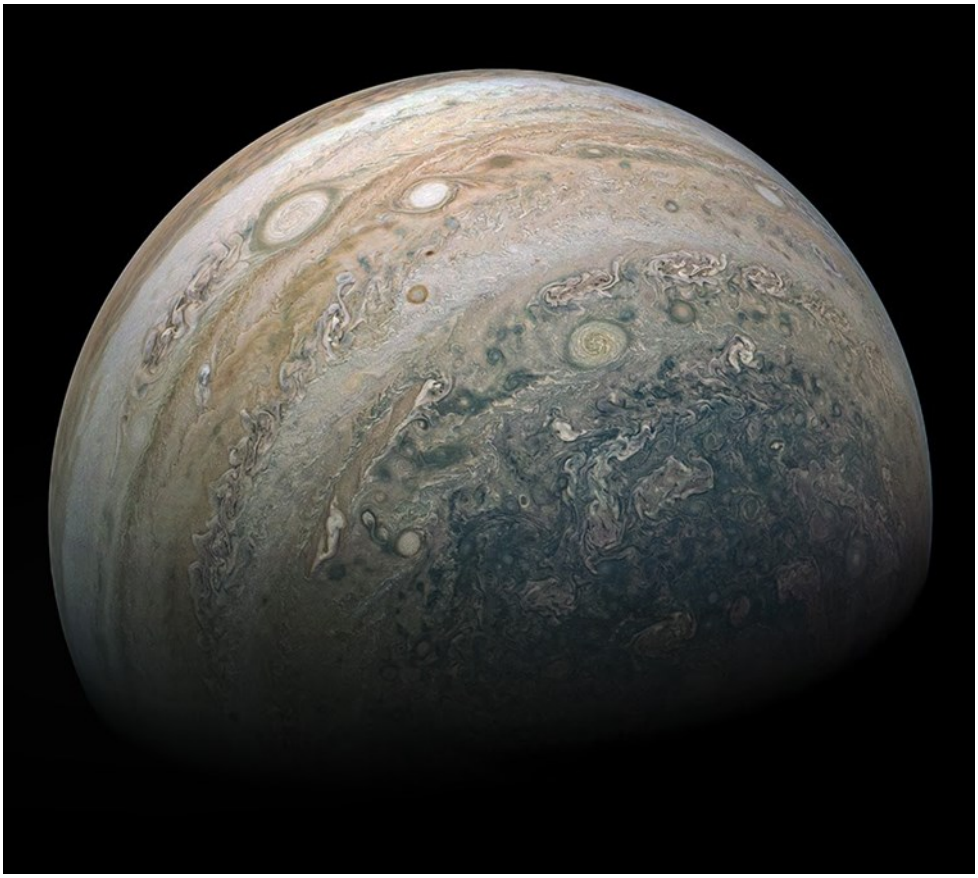
Ever want to mix in some science with your stargazing, but not sure where to start? NASA hosts a galaxy of citizen science programs that you can join! You'll find programs perfect for dedicated astronomers and novices alike, from reporting aurora, creating amazing images from real NASA data, searching for asteroids, and scouring data from NASA missions from the comfort of your home. If you can't get to your favorite stargazing spot, then NASA's suite of citizen science programs may be just the thing for you.

Jupiter shines brightly in the morning sky this spring. If you'd rather catch up on sleep, or if your local weather isn't cooperating, all you need is a space telescope - preferably one in orbit around Jupiter! Download raw images straight from the Juno mission, and even process and submit your favorites, on the **JunoCam** website! You may have seen some incredible images from Juno in the news, but did you know that these images were created by enthusiasts like yourself? Go to their website and download some sample images to start your image processing journey. Who knows where it will take you? Get started at bit.ly/nasajunocam

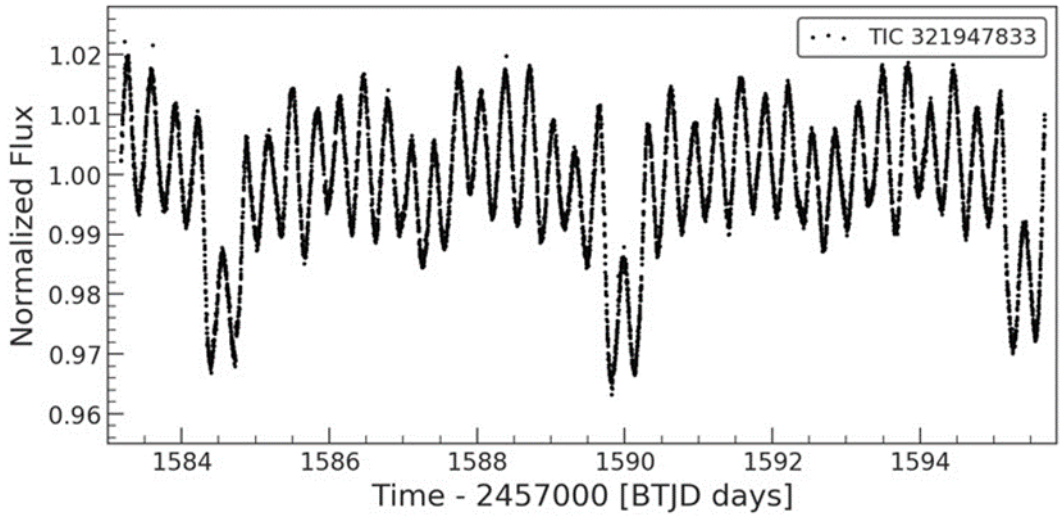
Interested in hunting for asteroids? Want to collaborate with a team to find them?? The **International Astronomical Search Collaboration** program matches potential asteroid hunters together into teams throughout the year to help each other dig into astronomical data in order to spot dim objects moving in between photos. If your team discovers a potential asteroid that is later confirmed, you may even get a chance to name it! Join or build a team and search for asteroids at iasc.cosmosearch.org

Want to help discover planets around other star systems? NASA's TESS mission is orbiting the Earth right now and scanning the sky for planets around other stars. It's accumulating a giant horde of data, and NASA scientists need your help to sift through it all to find other worlds! You can join **Planet Hunters TESS** at: planethunters.org

Intrigued by these opportunities? These are just a few of the many ways to participate in NASA citizen science, including observing your local environment with the GLOBE program, reporting aurora with Aurorasaurus, measuring snowpack levels, training software for Mars missions – even counting penguins! Discover more opportunities at science.nasa.gov/citizenscience and join the NASA citizen science Facebook group at facebook.com/groups/Sciencing/ And of course, visit nasa.gov to find the latest discoveries from all the research teams at NASA!



GREAT SOUTHERN JUPITER: Incredible image of Jupiter, submitted to the JunoCam site by Kevin M. Gill. Full Credits : NASA/JPL-Caltech/SwRI/MSSS/Kevin M. Gill



Light curve of a binary star system containing a pulsating (variable) star, as spotted on Planet Hunters TESS by user mhuten and featured by project scientist Nora Eisner as a "Light Curve of the Week." Credit: Planet Hunters TESS/ NASA/mhuten/Nora Eisner

The James Webb Infrared Telescope

For 30 years now the astronomical community has marveled at the incredible images captured by NASA's Hubble Space Telescope, first launched aboard the Space Shuttle Discovery on April 24, 1990. It has truly revolutionized astronomy and continues to do so to this day. However, eventually the attitude-control gyros or other pieces of electronic equipment on Hubble will begin to fail and at that point it will cease to function. A replacement is in the works and could possibly be launched in 2021. It will be called the James Webb telescope, but it will be dramatically different from Hubble in several ways. First, it will be devoted primarily to the infrared portion of the spectrum. Hubble was primarily a visual instrument with some limited near-infrared capability but the Webb telescope will delve deep into the infrared which will enable it to essentially see through interstellar dust that would normally obscure objects behind it. (**Please see the next page for a good example of what we can expect from a true infrared telescope).** The second major difference is that the Webb telescope mirror is much larger— 6.5 meters vs. 2.4 meters for Hubble. The mirror is comprised of 18 separate hexagonal segments made of gold-plated beryllium. The reason for the segmented mirror is so that it can be "folded up" into a small enough space to fit inside of a rocket's payload faring. After launch, it will unfold and expand to its full size. The last major difference is that the Webb telescope will not go into a typical Earth orbit like the Hubble. Instead, it will be launched towards what is know as a Lagrangian L2 point. L2 is one of the so-called Lagrangian points discovered by Joseph Louis Lagrange. Lagrangian points are locations in space where gravitational forces and the orbital motion of a body balance each other. Therefore, they can be used by spacecraft to essentially "hover" at the same point in space. L2 is located 1.5 million kilometers directly 'behind' the Earth as viewed from the Sun. It is about four times farther away from the Earth than the Moon and orbits the Sun at the same rate as Earth. The Webb telescope is named for former NASA administrator James Webb who presided over what some consider to be NASA's glory days from 1961 to 1968. The telescope has been in development since the 1990's but has encountered many technical problems along the way that have put it way behind schedule and way over budget. Scientist think that they have all of the problems worked out and the telescope is in final testing before launch. Right now, it is scheduled for launch in March of 2021 from the European Space Agency (ESA) launch facility in South America aboard an Arianne 5 rocket. The telescope has been a collaboration between NASA, ESA, and the Canadian Space Agency (CSA).

Webb telescope with mirror assembly folded for launch

Webb telescope with mirror assembly deployed as in space

The two photographs below help to give us a good preview of what we can expect from the James Webb Space Telescope. These photos were both taken with the Hubble telescope and feature the famous "Pillars of Creation" contained within the Eagle Nebula (M16). The photo on the left is the one that was made famous when originally released. It features enormous clouds or "pillars" of interstellar dust that is slowly combining to form new stars. While being astronomically valuable, these dust clouds are essentially opaque and prevent us from seeing what is inside or behind. This is where the infrared telescope becomes valuable. The photo on the right is taken of essentially the same area but in the near-infrared. Hubble had some limited near-infrared capability. Look at the dramatic difference in the two photos, particularly in reference to the dust clouds. Objects that were once obscured are now revealed, giving us a much more complete picture of the structure of the nebula system. The Webb telescope will likely give us even more dramatic views of these objects.

Auburn Astronomical Society

Membership Application Form

Name:

_____

Address:

_____

City: _____ **State:** _____ **Zip:** _____

Phone: _____ **Date of Application*** _____/_____/_____

E-mail:

_____

Telescope(s):

_____

_____

Area(s) of special interest:

_____

_____

Enclose: $20.00 for regular membership, payable in January. *Full-Time* student membership is half the Regular rate.

If you are a NEW member joining after the first of the year, refer to the prorated table below

Jan $20.00	Feb $18.33	Mar $16.66	Apr $14.99	May $13.33	Jun $11.66
Jul $10.00	Aug $8.33	Sep $6.66	Oct $4.99	Nov $2.33	Dec $1.66

Make checks payable to: Auburn Astronomical Society and return this application to:

Auburn Astronomical Society
c/o John Wingard, Secretary/Treasurer
#5 Wexton Court
Columbus, GA 31907

For questions about your dues or membership status, contact: jwin1048@gmail.com

Thank you for supporting the Auburn Astronomical Society!